# First Thoughts on Using the Farms for Large Scale Monte Carlo Production During Run 2

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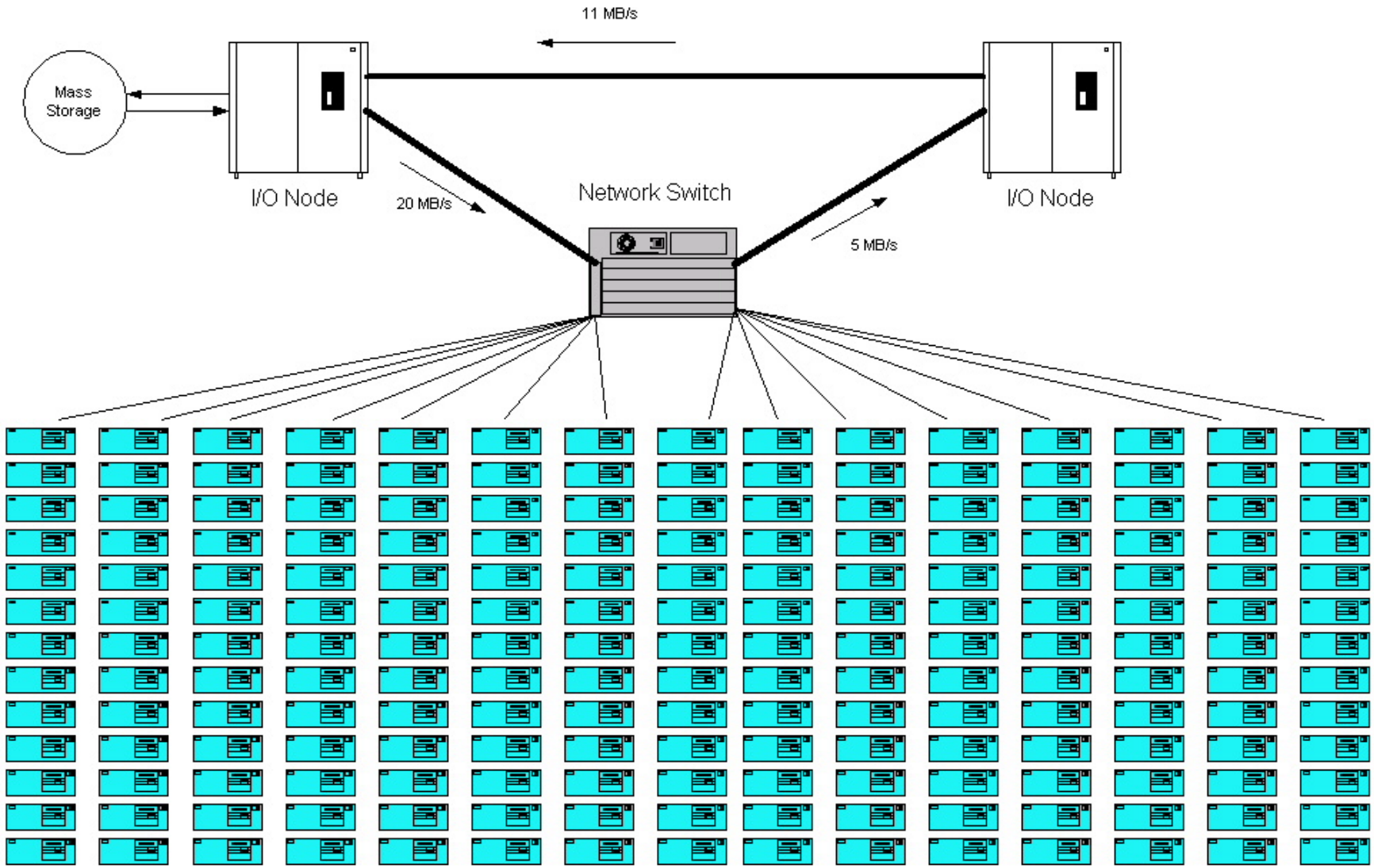
# Outline

- **Farms Status, Size, Capacity**
- **Possible Modes of Operation**
- **Options for Monte Carlo Production**

# CDF Run 2 Farms

- **48 PIII/500 duals running Linux, 512 MB memory, 42 GB disk, 100 Mbit ethernet**
- **40 PIII/800 duals running Linux, 512 MB memory, 50 GB disk, 100 Mbit ethernet**
- **SGI O2200 I/O node + SGI O2000 I/O node**
  - **Disk on both and tapedrives on the O2000**
- **Cisco 6509 switch to connect it all together**
- **Plan to purchase 60 PIII/1 GHz (or equiv) nodes and have them installed by late summer**

# Run II CDF PC Farm




EXIT

# Total Capacity

- **Assume 5 s/event on a PIII/500 machine.**
- **At 100% utilization:**
  - **Events/s = 96/5 + 80*(800/500)/5 + 120*(1000/500)/5 = 19.2 + 25.6 + 48**
  - **= 93 Hz**
- **Even if one assumes a more realistic utilization it will be easy to keep up with new data.**
- **There will be reprocessing.**
- **More machines can and probably will be purchased in FY02**

# Options for Monte Carlo Production

- **Monte Carlo could be run on the farms as a separate farmlet (or set of farmlets).**
  - **Could be run as one big job (writing out simulation output and ProductExe output files)**
  - **Or as two completely separate sets of jobs.**
- **These could be run in parallel with raw data reconstruction and reprocessing.**
- **Prefer that these jobs be large to make best use of the resources of the farms.**
- **The priorities (and all priorities) would be determined by the collaboration.**
  - **This could be an issue, if there is tension between getting "new" data available vs. Monte Carlo vs. reprocessing vs. expressline (if there is an expressline).**

# How much Monte Carlo?

- **The original farm design document (CDF 4810) envisioned a part of the farm for Monte Carlo generation and reconstruction.**
- **Assume that this is about ¼ of the farm, on the average.**
- **This would allow about 8 Hz of Monte Carlo, assuming that simulation+reconstruction is about 15 s/event on a PIII/500 (700,000 events/day).**
  - **This compares to 28 Hz average data-taking rate for CDF**
  - **Degrade by some factor for efficiency**
  - **Will be reduced if time/event increases**

    **=> 500,000 events/day**

# Options

- **Run Monte Carlo is parallel with raw processing and reprocessing.**
  - **Production Coordinators could run the jobs**
  - **Priorities set by CDF**
- **Same as above, but**
  - **Physics groups could run the jobs.**
- **Run simulation off-site and ProductionExe at Fermilab (MDC1).**

# Impact on Data Handling System

- **If we assume 200 KB/event output of simulation and 300 KB/event from ProductionExe and 6-8 Hz**
- **Could add 4-5 MB/s to the DH system on fcdfsgi1.**
- **If the event sizes are smaller, or a smaller subset (PADs) could be kept, the impact would be much smaller.**

# Coordination/bookkeeping

- **Need lots of little (and big) things to make this work on the farms:**
  - **Executable(s), calibrations**
  - **Random number seeds**
  - **Physics sets**
  - **Numbers of events**
  - **Priorities**
  - **Validation**
  - **Data set names**
  - **Run section numbers**
  - **Etc.**
- **A simulation production leader would be essential.**